



Meeting Summary

Upper San Joaquin Regional Conditions Work Group Meeting #3

September 1, 2009, 9:00 am – 3:15 pm

**Location: Madera County Farm Bureau
1102 South Pine Street
Madera, California 93673**

WORK GROUP ATTENDANCE:

Name	Organization	Status
Randall Anthony	Merced Irrigation District	Member
Margit Aramburu	University of the Pacific, Natural Resources Institute	Member
Julia Berry	Madera Farm Bureau	Member
Leo Capuchino	City of Mendota	Member
Dario Dominguez	County of Madera	Member
Sarge Green	CA Water Institute, CSU Fresno	Member
Richard Harmon	Landowner/Grower, Dos Palos, Calif.	Member
Reggie Hill	Lower San Joaquin Levee District	Member
Kellie Jacobs	County of Merced	Member
Jerry Lakeman	Fresno Metropolitan Flood Control Dist.	Member
Mari Martin	Resource Management Coalition	Member
Monty Schmitt	Natural Resources Defense Council	Member
John Shelton	CA Department of Fish and Game	Member
David van Rijn	U.S. Army Corps of Engineers	Member
Gary Hester	CA Department of Water Resources	CVFMP Program Manager
Merritt Rice	CA Department of Water Resources	CVFPO*
Roger Lee	CA Department of Water Resources	CVFPO*
Brian Smith	CA Department of Water Resources	DWR Lead
Eric Clyde	MWH Americas Inc.	Technical Lead
Alexa La Plante	MWH Americas Inc	Team
Pam Jones	Kearns & West	Facilitator
Ben Gettleman	Kearns & West	Facilitation Support / Note Taker

*Central Valley Flood Planning Office

Absent:

Dave Koehler	San Joaquin River Parkway and Cons. Trust	Member
Bill Luce	Friant Water Authority	Member

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Diana Westmoreland Pedrozo	Merced County Farm Bureau	Member
Jose Ramirez	City of Firebaugh	Member
Paul Romero	CA Department of Water Resources, Flood Plain Management Division	Member
John Slater	County of Madera, Resource Management Agency	Member
Douglas Welch	Chowchilla Water District	Member

Observers:

Larry Howard	URS
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WORK GROUP HOMEWORK/ACTION ITEMS

1. Review and provide comments on the following sections:
 - Section 2.3.1 – Physical
 - Section 2.3.5 – Infrastructure
 - Section 2.3.6 – Institutional
2. Provide additional comments to Priority Challenges and Drivers (Worksheet 7), and Problems and Opportunities (Worksheet 8) exercises.

Homework assignments should be sent to DWR lead Brian Smith, besmith@water.ca.gov with a copy to MWH lead Eric Clyde, Eric.S.Clyde@us.mwhglobal.com.

ACTION ITEMS: PROGRAM TEAM

1. Gary Hester will schedule meeting to address boundary issue on the southern edge of the Upper San Joaquin region.
2. Eric Clyde will remove Dry Creek from the DWR flood control map.
3. Merritt Rice, DWR, will work with David van Rijn to establish internet link to USACE Comprehensive Study Interim Report.
4. Merritt Rice will create a summary narrative on west side streams.
5. Brian Smith will provide a summary of DWR flood mapping that has happened since the 1997 flood and Pal Hegedus will present on the status of current mapping efforts at next meeting.

FUTURE MEETINGS SCHEDULE

Meeting #4 has been cancelled to provide the technical team adequate time to synthesize input received thus far and prepare materials for future meetings. The group will next meet for Meeting #5 during the week of October 5th, 2009 (meeting date TBD).

The following potential locations have been identified for future meetings:

- Fresno Metropolitan Flood Control District
- Miller & Lux Building, Los Banos
- University of California Cooperative Extension, Merced
- Firebaugh Community Center
- Merced County Farm Bureau

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GROUP RECAP (meeting highlights for use by Work Group partners in their communications)

The Upper San Joaquin Regional Conditions Work Group (Workgroup) of the CVFMP Program continued its work on September 1, 2009 with the following actions:

- Continued review of existing and unique conditions/resources in the area that should be considered in the development of the first Central Valley Flood Protection Plan (CVFPP) scheduled to be completed by January 1, 2012 for consideration for adoption by the Central Valley Flood Protection Board (Board) by July 2012. These include biological, physical, infrastructure, socioeconomic (including agriculture), cultural, institutional and other considerations.
- Reviewed and confirmed the changes made to the RCSR Report Outline.
- Developed a list of important drivers that impact flood management for the Upper San Joaquin region.
- Developed a list of problems within the Upper San Joaquin Region that are associated with the problem categories identified in Chapter 3 of the RCSR. These problems will be used to develop "problem statements" that will assist in the process of identifying goals and objectives for the region.

The Work Group's purpose is the development of content for the RCSR, a key component for developing the 2012 CVFPP. The RCSR will identify resources, conditions within the Central Valley, flood management and related problems and opportunities, and goals and objectives for use in preparing the CVFPP. The Upper San Joaquin Work Group is one of five regional Work Groups in the Central Valley.

MEETING OBJECTIVES

1. Respond to action items and other issues from Meeting #2 (including coordination among the regions).
2. Refine Drivers and Challenges and consider implications on the Regional Conditions Summary Report (RCSR).
3. Complete a first round discussion on the Regional Descriptions Section of the RCSR.
4. Confirm categories of Problems and key Problem Elements.
5. Begin generating content for Problem and Opportunity Statements.
6. Preview work for next meeting and discuss options for reducing full group meeting time.

SUMMARY

Welcome and Greetings

Brian Smith and meeting facilitator, Pam Jones, welcomed the work group participants. Following introductions, Pam Jones reviewed the meeting purpose, goals and agenda.

The group reviewed the outcomes of Meetings #1 and #2:

Meeting #1

- Review of General Description of Upper San Joaquin Region in the RCSR.
- Initial list of Resource Areas and Topics related to the Upper San Joaquin Region that may be important to address in the RCSR.
- Evaluation of References considered to be relevant to the CVFPP.

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Meeting #2

- Key Drivers and Influencers associated with the integrated flood management in the Upper San Joaquin Region. Introduction to Problems and Opportunities.
- Initial Identification of Community Success Factors for the CVFPP.
- Introduction to Projects and Programs in the Upper San Joaquin Region related to integrated flood management that will likely or certainly be in place during the near-term period of analysis for the CVFPP.
- Review of RCSR Chapter 1 (Introduction), Section 2.1 (General Regional Descriptions), and an outline for Sections 2.2 and 2.3.

Opening Remarks

Gary Hester welcomed the group and provided opening remarks. Mr. Hester also announced that the planning team had decided to have a pause for the technical team to synthesize and incorporate the input that has already been provided and sharpen the focus on the questions will be presented to work group members in future meetings. As a result, Meeting #4 will be cancelled for each of the Regional Conditions Work Groups. Mr. Hester noted that the work group would still achieve the milestones that were initially identified.

Review of Meeting #2 Action Items

1. Merritt Rice to develop a one paragraph summary, with citation, of the U.S. Army Corps of Engineers Central Valley Integrated Flood Management Study.
Status: Summary was provided as a one-page handout in meeting #3.
2. Eric Clyde to check with Roger Lee regarding comment sent by email from Randal Anthony on RCSR Chapter 2 (General Description for Upper San Joaquin Region)
Status: Comment was received and incorporated.
3. Eric Clyde to evaluate revision of Upper San Joaquin Regional Descriptions “Land Use and Economy” in regards to agricultural production. Example: Dairy production is not a growing industry for 2009.
Status: Description of agricultural production was deleted and “dairy” was added to the following sentence: “Other important industries in the region include *dairy*, food processing, chemical production, glass, textiles, paper, machinery, fabricated metal products, and variety of other goods.” (Chapter 2, General Regional Descriptions, Upper San Joaquin Region, Land Use and Economy, pg. 2-44).
4. Merritt Rice to report back to the work group on the meaning of “Limitation on Development” on detailed Chapter 2 outline, Section 2.2.3 Social and Economic Conditions.
Status: Merritt explained that this was an issue raised by the Delta Regional Conditions Work Group. “Limitation on Development” means that there are currently limitations on development in the Delta. There was further discussion on this issue in the Q&A Session (description provided below).

Q&A Session

Q: Do the “Limitation on Development” include easements as well as policy and regulatory requirements?

A: It pertains more to land use and regulatory requirements.

Q: What is the difference between the planning area and the regulatory area? Has that been addressed?

A: The planning team is still in the process of scheduling a time to have that discussion and resolve this issue. From the DWR perspective, the boundary identified in the Meeting #1 Q&A document reflects how the San Joaquin actually drains.

Comment: Our district is firmly in opposition to the DWR position. The sooner this is resolved the better, because without it the plan will have considerable opposition.

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Comment2: This should be noted as an important issue to resolve.

Comment: In terms of "Limitation on Development" (referring to Meeting #2 action item #4), my understanding is that this legislation puts substantial restrictions on development.

Reply: From the Delta perspective, there are existing restrictions, and this has more to do with existing conditions. When the process begins to identify solutions and the application of the water code, we will deal with the legislation and the restrictions that will apply.

Comment: There has been an additional layer of regulation in the Delta that is geographically specific to the legislation.

Comment: In terms of liability, it looks like this will have an impact on local communities.

Reply: There are implications to local communities in terms of their responsibility for flood coverage.

Comment2: Big Dry Creek represents a contradiction between the DWR map and actual responsibility.

Reply2: The team will make sure this is corrected.

Q: Will the USACE Comprehensive Study Interim Report be available for this plan? Is there additional language that will supplement the original 1962 law?

A: The USACE can post the Comprehensive Study online again. The legislation was changed on the Comprehensive Study for the Central Valley Integrated Flood Study. The USACE has received \$950,000 to continue the study. The USACE is working with the state technical services division to get studies and reports on the website.

Comment: DWR may want to put the Comprehensive Study on its website as well.

Review and Confirm Final Draft Chapter 1 & 2 Outline

MWH technical lead, Eric Clyde, informed the work group members that the planning team had received more references to consider for the Regional Conditions Summary Report (RCSR). Mr. Clyde also requested that, even if members had no comments on documents sent out as homework, work group members let the planning team know the status of their homework submittals. Facilitator, Pam Jones, informed the group that the planning team will confirm receipt of members' comments from hereon.

Mr. Clyde added that the planning team had not completely compiled all of the "Community Success Factors" from the Regional Conditions Work Groups. When the success factors are compiled, they will be used to inform the work groups and the planning team to make sure the plan addresses these factors. Merritt Rice added that as the group begins developing measures and considering whether they are implementable, they will come back to the success factors to prioritize accordingly; the solutions that correspond with success factors will be ranked higher than those that were not.

Mr. Clyde then reviewed the Chapter 2 outline and invited members to make comments on the outline.

Comment: In Section 2.3.1, Geomorphology -- Saline soils and trace elements should be represented.

Reply: Soils is represented in the subsection above (Topography, Geology, Soils, and Bathymetry) there, and this accounts for them.

Comment: In Section 2.3.2, Biological conditions -- Invasive species should have its own category. It could be listed under Special Status Species heading.

Comment: In Section 2.3.5, Transportation -- Bridges should be included.

Comment: Section 2.4.9, Institutional -- This section should be entitled, "Institutional Challenges or Needs", and it should have the same level of detail as listed in Section 2.3.6, Institutional.

Comment: We need to address the issue of Panoche Silver Creek. It impact water quality conditions (e.g., salinity and silt levels) in the Mendota pool and it can do serious damage. The hydrograph has changed, and proclivity has increased dramatically. We need to capture that changes have happened. Changes could impact flood control.

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Reply: Eric Clyde mentioned that this information could be incorporated into Section 2.3.5 (Existing Infrastructure) or it could be its own chapter. Eric says this issue is also described in detail in the State Plan of Flood Control (SPFC). The RCSR will just be a summary of the information in the SPFC.

Q: Is there a chapter that includes existing facilities and projects, and the changes that have occurred? Is this captured in Chapter 2?

A: Section 2.3.5 is Infrastructure; it will include flood management facilities.

Comment: This might get its own chapter; there is a lot of information on facilities.

Reply: This part will be more of a summary than an exhaustive study.

Comment: These issues are part of the Upper San Joaquin Regional Conditions so they need to be captured somewhere in the study.

Comment: It is essential to make sure we understand how the flooding occurred. There needs to be local ground-truthing of how things actually occurred so we can identify the problems correctly, and thus identify the solutions correctly. Where in the report can this be covered?

Reply: Section 2.3 is where we would place the physical factors related to historical flooding. Anything related to responding to floods would likely be placed in Section 2.3.7 - Emergency planning, response and Recovery.

Q: What is the status of DWR's 200-year flood maps?

A: DWR is working on the maps. Completing the maps is contingent on having the hydrology update and hydrologic models completed. These will not likely be finalized before the 2012 CVFPP deadline.

Q: Are the 100-year maps completed yet?

A: These maps are also dependent on new hydrological models that won't be completed for the next 2-3 years.

Comment: It would be helpful to have a summary of the mapping that has been done on the San Joaquin River to date.

Reply: We will create a summary, this is a good idea.

Chapter 2, Priority Challenges and Drivers

Facilitator, Pam Jones, reviewed the definition of a "driver" that impact integrated flood management, noting that a driver:

- a) Is an external factor that impacts flood management but is not under the control of the flood manager.
- b) Has a "trend" (up or down) and a "speed" (slow, medium, fast).
- c) Will be considered within the 2015-2050 timeframe for the CVFPP.

The members were divided into two break-out groups to identify important drivers *that impact flood management* for the Upper San Joaquin region. The results of the groups are listed in Worksheet 7 following this meeting summary.

Problems and Opportunities, Categories and Sub-Categories

MWH technical lead, Eric Clyde, presented on Problems and Opportunities, including how the consideration of Problems and Opportunities will be incorporated into the preparation of the CVFPP. After providing an initial list of problem categories, Mr. Clyde invited the work group members to comment and provide additions to the existing categories.

Comment: Private property is missing from the list.

Comment: The categories don't seem to have the same weight – they are random. Some are broad, and some are more focused and should be made into subcategories. The categories are disjointed, they could be better organized.

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Facilitator, Pam Jones, asked the group what the five main categories should be. A member responded that they could all fall within two categories: 1) Flood System Performance and 2) Policy and Institutional. Ms. Jones then asked if anything was missing from the original list, and a member responded that “Public Education/Awareness” was missing. Another member proposed the following three categories of problems:

- 1) Flood System Performance
- 2) Policy and Institutional
- 3) Public Awareness

The members were divided into two break-out groups to identify problems relevant to flood management in the Upper San Joaquin region. The results of the groups are listed in Worksheet 8 following this meeting summary.

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Worksheet 7: Establishing Critical Drivers

Thinking about 2050 as the period of analysis and how conditions might change in the future, look at the list of Drivers developed by your Workgroup and the other Workgroups. As a reminder Drivers are those trends and external forces that are outside of the control of flood managers but impact flood management. Drivers also have a direction such as more or less, faster or slower, etc.

During Meeting 2 some of the workgroups were also able to capture problems and existing conditions on their driver lists, for example seismic issues were listed. This additional information was extremely helpful and has been captured in other parts of the text. The compiled list you are reviewing now is just drivers. [Note: You will review text on existing conditions as part of your homework and will discuss problems later on in this meeting.]

UNDERSTANDING THE DRIVERS

We would like your assessment of how this driver is important within your region and sub-regions, and the impacts of the key drivers on flood management.

DRIVER	RATE OR TREND OF CHANGE WITHIN YOUR REGION OR SUB- REGIONS	HOW DOES THIS DRIVER IMPACT FLOOD MANAGEMENT?
Type and location of development <ul style="list-style-type: none"> Residential Agricultural Industrial 		
Change in the number of people living in the floodplain		

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DRIVER	RATE OR TREND OF CHANGE WITHIN YOUR REGION OR SUB- REGIONS	HOW DOES THIS DRIVER IMPACT FLOOD MANAGEMENT?
Climate change <ul style="list-style-type: none"> • Sea level rise • Runoff patterns • Temperature 		
Environmental regulations (ESA, CEQA/NEPA, AB 32)		
Water Supply <ul style="list-style-type: none"> • Reservoir operations • Development • Subsidence • Conveyance 		
Water Quality <ul style="list-style-type: none"> • Temperature • Contaminants transport 		
Available public funding for needed improvement (deferred O&M, viability of future investments)		
Natural Function (Ecosystem) Changes <ul style="list-style-type: none"> • Invasive Species-vegetation, mitten crab, quagga mussels • Restoration 		

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DRIVER: Type and location of development (Group 1)

<p>Rate or trend of change of driver within your region or sub-regions?</p>	<p>Residential</p> <ul style="list-style-type: none"> • In Merced, the 200-year flood plain will have a significant impact on development in Merced County. <ul style="list-style-type: none"> ◦ Merced is in the “bottom of the bowl” – entirely in the 200-year flood plain. • UC Merced is a subregion for demand and for residential development. <ul style="list-style-type: none"> ◦ Rate of growth is uncertain. It growing more slowly than expected. • Moderate growth along I-5, 99 and 152 corridors. • Huron, Firebaugh and Mendota will continue to grow, but are at risk of flooding. • DWR white paper says more people will live in the Central Valley; this affects all major population centers. • Cyclical growth – generally, the growth trend is increasing but at varying speeds depending on economic conditions. • More people have moved into nearby cities that are in the floodplain, example: City of Mendota population 1970 was 2,700. Now, 2009 population is 9,800 with future plans to grow and develop our industrial park. <p>Agriculture</p> <ul style="list-style-type: none"> • Growth of agriculture hinges on water supply <ul style="list-style-type: none"> ◦ More water = more agriculture ◦ Less water = less agriculture <p>Industrial</p> <ul style="list-style-type: none"> • Same as residential.
<p>How do you believe this driver will impact flood management across your region and sub-regions?</p>	<p>Residential</p> <ul style="list-style-type: none"> • Merced development – pressure for residential development will be met with regulatory constraints. <ul style="list-style-type: none"> ◦ Will put pressure on politicians to develop flood control projects since the residential growth will be increasing • Urbanization/increase in development puts more water in the flood control system more quickly – it changes the hydrology. • With population growth nearing 10,000 it will be necessary to provide 100 year flood protection from the Panoche/ Silver creek watershed. <p>Agriculture</p> <ul style="list-style-type: none"> • Change in cropping patterns. <ul style="list-style-type: none"> ◦ More orchards and vines are being planted = more run-off because of the more compacted soils. ◦ Increase in permanent crops (nuts) on west side – usually grown at higher elevations • Agriculture can be a compatible use with flood management (e.g., Yolo Bypass). • Less agriculture could equal more flood storage.

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	<ul style="list-style-type: none"> • More agricultural properties are being retained for refuge areas, potential use for flood management <ul style="list-style-type: none"> ○ 29% of agriculture in Merced County is a refuge.
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DRIVER: Type and location of development (Group 2)

Rate or trend of change of driver within your region or sub-regions?	<p>Residential</p> <ul style="list-style-type: none"> • Growth in Los Banos - changes occurred in Bay Area commute traffic. • Merced population may grow with UC Merced. <ul style="list-style-type: none"> ○ Merced has only slowed a little, and will speed up once economy recovers. • Fresno, Firebaugh, Merced growth trend is slow, but when economy bounces back, it will speed up. Los Banos may not bounce back as much. • Industrial-related communities are slow, but will definitely pick up when economy improves. • Agriculture-related communities: Communities along I-5 (south of Los Banos) – residential growth is slow, possibly reversing. <ul style="list-style-type: none"> ○ For areas that are agriculturally-driven and water supply-driven (e.g., Firebaugh), it is questionable if growth will speed up even once economy picks up again. <p>Agriculture</p> <ul style="list-style-type: none"> • Merced and Madera Counties – steady or slight decrease due to little available of water. • Fresno County – decreases in water supply and drainage issues have caused land retirement which is reducing agricultural development. <p>Industrial</p> <ul style="list-style-type: none"> • Merced County – tremendous interest in green energy industry. • East side of Merced County – health care, water technology, manufacturing, high tech industry
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	<p>improvements.</p> <ul style="list-style-type: none"> ○ Trend is slow to medium. • West side of Merced County – industry could explode because of cheap land and access to grid, but it is dependent on water supply availability. <ul style="list-style-type: none"> ○ Slow to medium growth.
How do you believe this driver will impact flood management across your region and sub-regions?	<p>Residential</p> <ul style="list-style-type: none"> • With increases in development, the need for flood control increases. • Bear Creek, Madera, Fresno, Mendota, Firebaugh, Los Banos all vulnerable to flooding. • From Los Banos to the east side of Merced County will flood towns. • South of Merced County there won't be many impacts on residences because of little development. • East side of corridor (Madera, Chowchilla, Livingston) are all along the river corridor. • Madera and Merced counties are high risk since development will likely increase. • Residential growth affects funding for flood management. <p>Agriculture</p> <ul style="list-style-type: none"> • In Upper San Joaquin Region, less available water has resulted in the transition to higher value crops, which increases the need and funding for flood management (i.e. almonds to pistachios).

DRIVER: Change in the number of people living in the floodplain

Rate or trend of change of driver within your region or sub-regions?	<ul style="list-style-type: none"> • If population increases, the number of people living in the floodplain will increase. <ul style="list-style-type: none"> ○ It is difficult to find land that is not in the flood plain because the entire region is so flat. Cost to provide services increases if you develop the land. ○ The trend is slow to medium increase. • Building requirements (for flood response) will increase costs of development. <ul style="list-style-type: none"> ○ Tension about where to proceed with development • Flood management will be key driver in whether development occurs in the flood plain. • City of Fresno and foothill communities (Oakhurst) are the exception <ul style="list-style-type: none"> ○ Fresno has good flood control and foothill communities are on higher ground. ○ These areas may develop faster, but difficult to tell because water supply availability will limit it.
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How do you believe this driver will impact flood management across your region and sub-regions?	<ul style="list-style-type: none"> • Increase difficulties to conduct flood management practices • Increase costs for flood insurance <ul style="list-style-type: none"> ○ Right now it's optional. May become mandatory in future.
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DRIVER: Climate change

Rate or trend of change of driver within your region or sub-regions?	<p>Sea level rise</p> <ul style="list-style-type: none"> • DWR study predicts a three-foot rise in the Delta by 2050. <p>Runoff patterns</p> <ul style="list-style-type: none"> • Volume of precipitation will likely stay similar to current levels, but will come more from rain and less from snow. • Warmer temperatures will affect water storage in our upstream reservoirs with limited capacity and higher runoff. <p>Temperature</p> <ul style="list-style-type: none"> • Will increase. <p>Fire</p> <ul style="list-style-type: none"> • Longer drought season could lead to longer fire season.
How do you believe this driver will impact flood management across your region and sub-regions?	<p>Sea level rise</p> <ul style="list-style-type: none"> • If Delta becomes more sensitive to receiving flows, it could change the operation of projects because of impacts downstream. <p>Runoff patterns</p> <ul style="list-style-type: none"> • The conflict between holds/releases related to supply and flood management will increase. • Earlier snow melt. • Higher variability in rain events (storms, droughts). • Larger runoff and storms. • Need to build additional water storage facilities such as Temperance Flats for flood control. <p>Temperature</p> <ul style="list-style-type: none"> • Less snow. • Affects runoff patterns. <p>Fire</p> <ul style="list-style-type: none"> • Will cause increased run-off from reductions in amount of vegetation to catch and absorb runoff. • Increased erosion and sedimentation.

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DRIVER: Environmental regulations

Rate or trend of change of driver within your region or sub-regions?	<ul style="list-style-type: none"> Will increase.
How do you believe this driver will impact flood management across your region and sub-regions?	<ul style="list-style-type: none"> Planning will become more complicated because of overlapping jurisdictions, overlapping scopes, and sheer numbers. The tension between flood operations and their potential impacts on endangered species will become more difficult to navigate. Maintenance and future construction will become more difficult due to compliance issues. Water rights for flood flows will be impacted. <ul style="list-style-type: none"> Example: Section 215 water needs prior permitting.

DRIVER: Water Supply

Rate or trend of change of driver within your region or sub-regions?	<p>Reservoir Operations</p> <ul style="list-style-type: none"> Could result in more groundwater storage. Trend may increase slightly, but not change too much because water supply will not increase. <p>Development</p> <ul style="list-style-type: none"> Trend of developing new water supply sources: <ul style="list-style-type: none"> Surface storage projects will not be accomplished by 2050 Groundwater banking is the only thing that may increase (slow to moderate growth) Desalination - trend is very slow Recycled water will increase slowly Conservation practices will increase slowly -- monitoring and metering (charging by use) The development in other water supply sources will be dependent on cost-effectiveness. Increase in conveyance facilities -- trend is slow (e.g., Mendota Pool) <p>Subsidence</p> <ul style="list-style-type: none"> Trend is increasing moderately. Water Districts with limited water allocations causing farm grower to rely on ground water pumping to supplement their water needs since 2008 causing land subsidence.
How do you believe this driver will impact flood management across your region and sub-regions?	<p>Reservoir Operations</p> <ul style="list-style-type: none"> Addressing reservoir management for flood control will become more difficult. Flood control technology will need to improve (forecasting), power pillows (snow measurement). Theory is that by 2050, will be able to store more water in groundwater aquifers and reduce

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	<p>reliability on reservoir storage</p> <ul style="list-style-type: none"> The timing of reservoir water releases will change. <p>Development</p> <ul style="list-style-type: none"> The development of local water supply (desalination) in southern California will reduce the need for conveyance of water and increase opportunity for flood management in the north. Development of new water supply sources will not have a significant impact on flood management. Less water supply demand will allow for reservoir re-operation. Increase in conveyance facilities will allow for more flexibility in flood management and will make better use of flood management systems. <p>Subsidence</p> <ul style="list-style-type: none"> Pressure on land surface increases flood risk (deepens the flood plain and reduces groundwater storage). Impacts river capacity River bank levy settlement as well as infrastructure failure to bridges, canals, freeways, highways and railroad tracks.
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DRIVER: Water quality

Rate or trend of change of driver within your region or sub-regions?	<p>Temperature</p> <ul style="list-style-type: none"> Weak driver. <p>Contaminants transport</p> <ul style="list-style-type: none"> Pumping well water reduces water quality for irrigation and tends to contaminate the soil with high levels of minerals, such as boron, selenium and iron manganese.
How do you believe this driver will impact flood management across your region and sub-regions?	<p>Temperature</p> <ul style="list-style-type: none"> Will hold water later in the year to try and keep it cool for fish. Need to hold more water later, and may impact flood capacity. Wetlands can cool things down. <p>Contaminants transport</p> <ul style="list-style-type: none"> More development in flood plain increases contaminant transport during flooding. Heavy rainy weather season water runoff from farm lands and watershed areas will cause contaminants to enter the river streams

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DRIVER: Available public funding for needed improvement

Rate or trend of change of driver within your region or sub-regions?	<ul style="list-style-type: none"> • Slowly increasing – as you get a larger pool of people, funding increases. • From the state and federal standpoint, funding will decrease as the total amount of money available for projects may diminish. • Trend toward locals sharing more of the financial burden for flood management will increase faster. <ul style="list-style-type: none"> ○ Locals will end up having to pay for flood control projects. ○ Public funding will be more focused on larger flood control benefits. • This issue is not only a driver, but a problem and a solution. • April 2002 U.S. Census info. Median Household Income \$23,705, with Per Capita Income at \$6,967
How do you believe this driver will impact flood management across your region and sub-regions?	<ul style="list-style-type: none"> • It will be more difficult to implement flood control projects due to lack of money. • Unable to provide much public funding because of low income and high unemployment of 40% in Mendota 2009.

DRIVER: Natural Function (Ecosystem) Changes

Rate or trend of change of driver within your region or sub-regions?	<p>Invasive species</p> <ul style="list-style-type: none"> • Trend is fast • Department of Fish and Game is establishing many programs to control it, but increases in spread of invasive species and climate change are increasing the problem. • Difficult to tell which invasive species is coming next. <p>Restoration</p> <ul style="list-style-type: none"> • Trend will be slow, but will improve situation. <ul style="list-style-type: none"> ○ Lawsuits, lack of funding, etc. will slow progress from restoration efforts. • SJR restoration plan to begin October 1, 2009 by releasing water from Friant Dam
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<p>How do you believe this driver will impact flood management across your region and sub-regions?</p>	<p>Invasive species</p> <ul style="list-style-type: none">• Will restrict flood management capacity, maintenance and operations.• Quagga mussels, vegetation growth will impact the ability to provide flood control at reservoirs (clogged pipes, etc.).• Vegetation growth could also reduce channel capacity. <p>Restoration</p> <ul style="list-style-type: none">• If done correctly, should have positive effects on flood management.<ul style="list-style-type: none">○ Should increase flood capacity and reduce impacts that occur during floods.
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Worksheet 8: Translating Risks to Problem and Opportunity Categories

During Meeting 2 the Workgroups received an introduction to the CVFPP section on Problems and Opportunities and completed worksheets defining assets at risk, the reasons for the risks and the potential consequences of not addressing the risks. Several groups also began discussion potential opportunities for actions that can be done that could further increase the value of CVFPP activity.

Based on your initial risk assessment, the technical team has bundled your ideas into categories and groups of issues for which problems and opportunity statements about your regional conditions will be prepared.

DEFINING THE PROBLEM AND OPPORTUNITY CATEGORIES

As a full group, review the Categories the technical team has identified.

Question 1

Looking at this list what would you add, subtract or change ABOUT THE CATEGORIES to better reflect the problems and opportunities in your region?

- Flood System Performance
- System Maintenance and Repairs
- Reservoir Operation
- Habitat Quality, Quantity, and Connectivity
- Policy and Institutional
- Water Supply (Shared Facilities, GW Recharge)
- Level of Protection
- Land Use
- Emergency Response
- Post-Flood Recovery
- Water Quality
- Public Education (added as new category)

POPULATING THE PROBLEM AND OPPORTUNITY CATEGORIES

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Looking at the CATEGORIES AND SUBCATEGORIES, think about the way the problems and opportunities statements will be crafted. The facilitator will assist the group in an open brainstorm to generate the problems and opportunities you will want to see in those categories.

Rules:

- If you have a different view about where something should go, just add it to that category rather than correcting another group member. Just note the reason.
- A group member that places something in one category may change their mind and move it to another as long as it is their own suggestion.

Question 2

What problems and opportunities do you suggest for each of the categories and sub-categories as it relates to your region?

CATEGORY	IMPACTS WITHIN FLOOD PROTECTION FACILITIES	IMPACTS OUTSIDE FLOOD PROTECTION FACILITIES	PROBLEM
Flood System Performance	Yes	Yes	<ul style="list-style-type: none"> • The system doesn't work as it was designed to work (levee performance) and it is inadequate (lack of channel capacity and aging infrastructure). • Change in flood flows – actual flows are higher than design flow capacity (not aligned). • Changes in watershed/urbanization – system is not performing as well as when it was originally constructed. <ul style="list-style-type: none"> ○ Cities are creating more run-off (increased pavement area decreases soil permeability). • Changes in levee design standards <ul style="list-style-type: none"> ○ Levees are designed differently as time progresses and needs change. ○ Piecemeal approach to design standards. • Liability has increased due to legal decisions. • System was not designed to meet habitat and ecosystem needs. <ul style="list-style-type: none"> ○ Has created regulatory problems today.

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CATEGORY	IMPACTS WITHIN FLOOD PROTECTION FACILITIES	IMPACTS OUTSIDE FLOOD PROTECTION FACILITIES	PROBLEM
System Maintenance and Repairs	Yes	Yes	<ul style="list-style-type: none"> • Lack of funding and increased environmental regulations make it impossible for flood control managers to do proper maintenance and repairs (e.g. reduced channel capacity, burning days). • Regulatory requirements are cost prohibitive. • Prop 218 public approval process required for assessment increases. • Unknown jurisdiction concerning maintenance of some levees – who is responsible? • Lack of understanding and training for permitting agencies.
Reservoir Operation	Yes	Yes	<ul style="list-style-type: none"> • Competing water demands: flood control vs. water supply vs. ecosystem water needs. • Lack of integrated forecasting and coordination operations. • Potential loss of reservoir capacity due to sedimentation in small reservoirs. • Recreation – needs for water levels for recreation activities (e.g., boating). • Water quality – reservoir releases to meet water quality standards (e.g., flow and temperature releases for fish). • Water transfers – need for coordination among operators (e.g., delivery to Grasslands District limited by water levels, and in Merced the Central California Irrigation District).
Habitat Quality, Quantity, and Connectivity	Yes	Yes	<ul style="list-style-type: none"> • Flood management systems were not built to support ecosystem and habitat needs. • Restoration attempts to go back to a system that no longer exists. • Agriculture production is impacted by altering existing flood systems. • Change in public expectations that you can do it all. • Listed species have to be managed and accommodated. <ul style="list-style-type: none"> ○ System doesn't provide for the recovery of listed species.

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CATEGORY	IMPACTS WITHIN FLOOD PROTECTION FACILITIES	IMPACTS OUTSIDE FLOOD PROTECTION FACILITIES	PROBLEM
Policy and Institutional	Yes	Yes	<ul style="list-style-type: none"> • Lack of consistency between state and federal flood agencies. • Jurisdictional conflicts and uncertainty (DFG, USACE, DWR need to be on the same page). • Pressure to develop in flood plain where flooding has historically has taken place <ul style="list-style-type: none"> ◦ Example: Developer in Firebaugh is putting up a levee but that doesn't address long term needs and puts other houses at risk. • Lack of funding for construction and maintenance.
Water Supply (Shared Facilities, Groundwater Recharge)	Yes	Yes	<ul style="list-style-type: none"> • Inherent conflict of multi-purpose reservoir system – reservoirs vs. flood management vs. ecosystem needs. <ul style="list-style-type: none"> ◦ If flood control needs space, and water supply needs water, they can't be there at the same time • Competing demands for water supply: <ul style="list-style-type: none"> ◦ Agriculture vs. city vs. ecosystem • Groundwater recharge facilities need room, can't be done in small spaces and they take time: <ul style="list-style-type: none"> ◦ Inherent conflict with flood management which has immediate needs ◦ Groundwater recharge has a longer time horizon than flood control • There are regulatory difficulties in making this happen – very hard to get permits. • San Joaquin River doesn't have a large reservoir. <ul style="list-style-type: none"> ◦ Lack of flood management and adequate surface storage.

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CATEGORY	IMPACTS WITHIN FLOOD PROTECTION FACILITIES	IMPACTS OUTSIDE FLOOD PROTECTION FACILITIES	PROBLEM
Level of Protection	Yes	Yes	<ul style="list-style-type: none"> • Regulations change (change from a 100- to a 200-year level of protection) resulting in a lower level of protection than needed. • Recalculation of hydrograph revealed that level of protection is lower than previously thought. • Inconsistencies between different agencies on level of protection (LOP) requirements. • Changing criteria for what is a viable levee or viable structure. • Inconsistencies in maintenance criteria (e.g., vegetation growth), how it affects LOP. • Unreasonable expectations – LOP is a goal that can't necessarily be reached. <ul style="list-style-type: none"> ◦ Just because it is said that a levee provides 100-year LOP doesn't mean that it will take care of all 100-year flood events. Public perception is skewed.
Land Use	Yes	Yes	<ul style="list-style-type: none"> • Inappropriate legal and illegal land use: <ul style="list-style-type: none"> ◦ Legal -- mobile homes ◦ Illegal -- meth labs • Inadequate enforcement (use of ROV, structures on and along levees). • Changing rules negate good intentions of local government. • General plans should limit floodplain development. • Many local agencies are pressured to "put things within the flood plain" because it's cheaper. • Conflicting socio-economic values result in inappropriate land use/zoning.

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CATEGORY	IMPACTS WITHIN FLOOD PROTECTION FACILITIES	IMPACTS OUTSIDE FLOOD PROTECTION FACILITIES	PROBLEM
Emergency Response	Yes	Yes	<ul style="list-style-type: none"> • Lack of coordination of services (e.g., materials management) <ul style="list-style-type: none"> ◦ These services are more available for project facilities, but not as much for locally owned facilities or non-project levees. This affects flood response system as a whole. • Inadequate emergency warning system (technology) – monitoring and system for notification/warning to public. • Lack of institutional capacity to deal with flood response. • Lack of comprehensive mutual aid agreements for flood response.
Post Flood Recovery		Yes	<ul style="list-style-type: none"> • Inaccuracies in estimating costs for clean-up in agricultural areas. • Difficult for a region to recover due to inconsistencies in flood response/assistance -- fragmented funding for flood response <ul style="list-style-type: none"> ◦ Unequal financial recovery – local, state, federal, and individual. • Lack of agency coordination in flood response hinders recovery. • Lack of a post-flood recovery plan that addresses agency coordination, public education. • In areas with a lot of physical damage, it is difficult to determine who is responsible for debris clean-up (flotsam disposal). • Determining the origin of structural problems with levees (lack of O&M vs. flood damage) impacts ability to get funding.

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CATEGORY	IMPACTS WITHIN FLOOD PROTECTION FACILITIES	IMPACTS OUTSIDE FLOOD PROTECTION FACILITIES	PROBLEM
Water Quality	Yes	Yes	<ul style="list-style-type: none"> Contaminant impacts inside the flood protection facilities would be remobilized and redistributed (mercury pollution, sediments). Storage of hazardous materials/waste in the flood plain. Reduction in environmental water quality -- flows, temperature, turbidity for fish. Nutrient loading from dairies, lagoons, wastewater treatment facilities. Surface runoff mobilizes natural materials that, when they accumulate, can become a water quality problem. Illegal land use (e.g., meth labs) contributes to water quality problems during flooding.
Public Education and Awareness	Yes	Yes	<ul style="list-style-type: none"> Lack of public awareness of flood risk <ul style="list-style-type: none"> This increases flood risks and/or flood damage